

Sandra Rankin and James Demetre  
University of Greenwich, School of Health & Social Care

This case study describes a snapshot of the use and the perceptions of online marking (OM) via Turnitin within the School of Health & Social Care at the University of Greenwich. A small online survey was made available to teaching staff for a limited period of three weeks. The purpose of the survey was to informally review how staff felt about using online marking (OM) compared to paper marking. Those staff members who had already used online marking were invited to respond to three quantitative and two qualitative questions about their online marking preferences. A 28%

Educational technology can generically be considered at the very least, depending on your viewpoint, essential if not pervasive and an inviting part of the educating process in the 21st Century (Framework for 21st Century Learning, 2008). A prime example would be the use of online marking tools. One hears through colleagues or reads about the ease of use and speed by which it appears that assessments almost mark themselves. Who would not be interested in such a tool that virtually makes the tutor (marker) redundant or at least shows a hint of promise to free up time that can be devoted to other academic endeavours. Tutors no longer need to walk around with lopsided shoulders, from years of carrying bundles of papers to grade, have piles of boxes containing graded papers in their offices ready for distribution to students, or need a corner of their office devoted to the 'uncollected' graveyard (Winter and Dye, 2004),

a utopian scenario indeed. Tutors can now routinely take the guesswork out of whether a student's essay was 'all their own work' or not, simply by reading originality reports and then integrating comments into their feedback online to the uninitiated student who naively or otherwise submits unacceptable or unoriginal work (Bidgood et al., 2007).

Research further suggests (Adams, Meyer and Anderson, 2011) that through using tools provided by Turnitin such as GradeMark, that students also learn more readily about referencing systems, thereby reducing their levels of paraphrasing, reducing their levels of copying internet sources and the duplication of each other's work, which consequently improves their own writing skills. Another reported bonus being that students can 'virtually' collect assessments and read what used to be often indecipherable comments by their tutor; that access is 24/7, with no need to make the 'obligatory' appointment to see your tutor (Project STAF, 2010), suggesting that contact time can now be used more effectively between students and tutors.

The University of Greenwich, along with 95% of UK universities has invested in the use of the JISC endorsed TurnitinUK (iParadigms, 2007), although the distribution of how Turnitin is used within each university is unknown. While Turnitin is mainly identified as a mechanism for detecting plagiarism, the software was originally developed as a text-matching tool by Barrie at UC Berkeley (1994), and is now used in 85 countries worldwide (iParadigms, 2007). The GradeMark tool has also been used by those same universities since its inception as part of that distribution. Again it is hard to quantify the uptake using OM either by individuals or courses and arguably it could be said that now the GradeMark tool is equal in value for OM assessments as the Originality Check tool is for plagiarism detection, as both provide valuable feedback to students (Davis, 2007). Turnitin is not the only provider of online marking tools, but it is ranked highly among others (Burrows & Shortis, 2010).

Within the School of Health & Social Care, one of the considerations discussed was how would the uninitiated tutor become involved in OM, share practice or improve their workload using such tools. For example, where would the tutor access guidelines and good practice to enhance their marking in a very different medium to pen and paper? What training mechanisms are in place to support new and existing tutors? Here the expertise and experience within the School for online marking is very diverse. Initially, since about 2004, stemming from a handful of online markers using Turnitin's GradeMark tool there has been a significant rise as more colleagues increase their marking online compared to paper and pen. Several initiatives can be seen as drivers toward this change; more staff demonstrating good practice, increased shared marking with colleagues; increasing access to moderation online; an increase in mobile technology (laptops, iPads); perhaps even reducing paper costs and improving sustainability track. Yet the culture towards online marking remains persuasive rather than prescriptive when it comes to practice and deciding what is best in marking style. While the focus rightly remains on providing good quality and constructive feedback, there is no overall strategy on what tools to use in providing feedback or how to display that feedback, that is an ongoing process. Two factors remain clear, first, that the difference between processing online and paper marking is wide and second, the experience of tutors interacting with both these methods is even wider.

This difference opens up the debate about how marking online compares to paper marking, or perhaps more appropriately, how it differs both quantitatively and qualitatively across a number of factors; such as time allocated as part of the workload, richness of comments in feedback, training needs, support from colleagues, computer support in the workplace as well as at home.

## A Survey of Experiences within the School

All academic staff in the School of Health & Social Care were invited by e-mail to complete an online survey configured on the Qualtrics site. The survey link was included in the e-mail and emphasised the anonymity of each respondent. The survey was explicitly targeted at colleagues who had undertaken at the very least, some OM using GradeMark and was made available during a three-week period at the end of the second term. Of approximately 130 academic staff, 37 responded to the survey. This apparently low response rate (28%) underestimates the true participation rate, as an unknown number of staff do not engage in any OM.

The survey questions were informed both by previously claimed advantages of online marking (e.g. Davis, op.cit.) and by recent human factors research suggesting that prolonged work in front of a visual display unit is associated with visual (Abdelaziz et al., 2009; Charpe & Kaushik, 2009) and musculoskeletal problems (Chang et al., 2007).

## Survey Findings

Respondents showed considerable variability in the extent of their use of OM, with 34% indicating that they used OM for all their courses, 28% indicating they did so for most courses and 38% for only a few courses. The charts presented below reveal the distribution of various responses to each of the key questions posed in the survey (Figures 1 – 7). The Chi Square Goodness-of-Fit test ( $\chi^2$ ) was used to analyse the data presented in all seven figures below.  $\chi^2$  assesses the probability that any observed pattern of preference deviates from a random distribution of preferences. Thus, the greater the preference for a given category relative to other categories, the higher the value of  $\chi^2$ , and the lower the probability of the distribution having arisen by chance. The p level set for significance was  $p < .05$ ; all significant p values are indicated in the text.

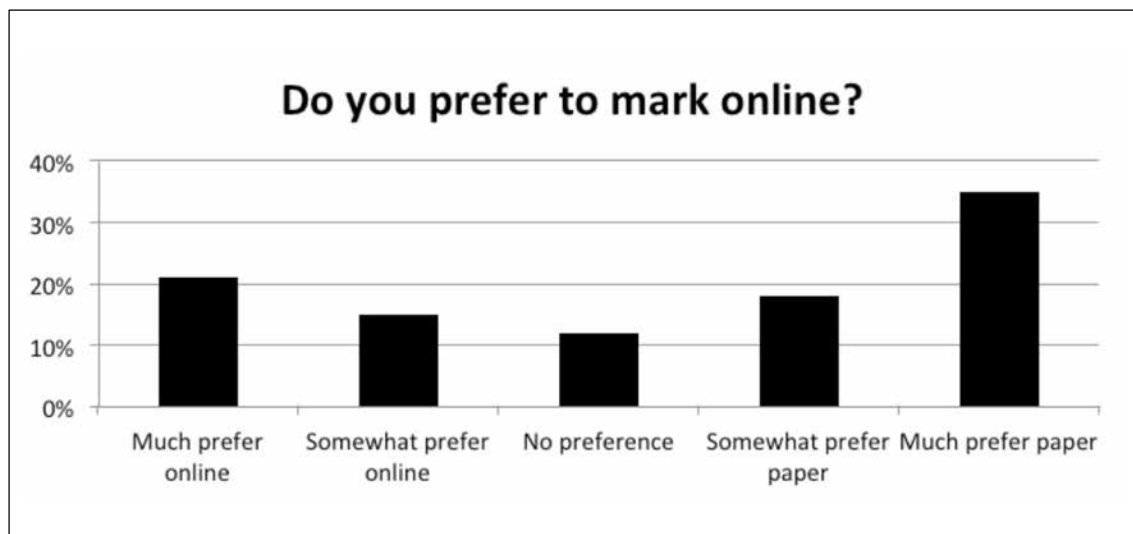


Figure 1 Distribution of Preferences for Online and Paper Marking (by Percentage of Sample)

Figure 1 suggests that the majority of respondents preferred to mark paper assignments. However, this pattern of preferences was not statistically significant. Suffice it to say that considerable individual variability in preferences exists in the present sample.

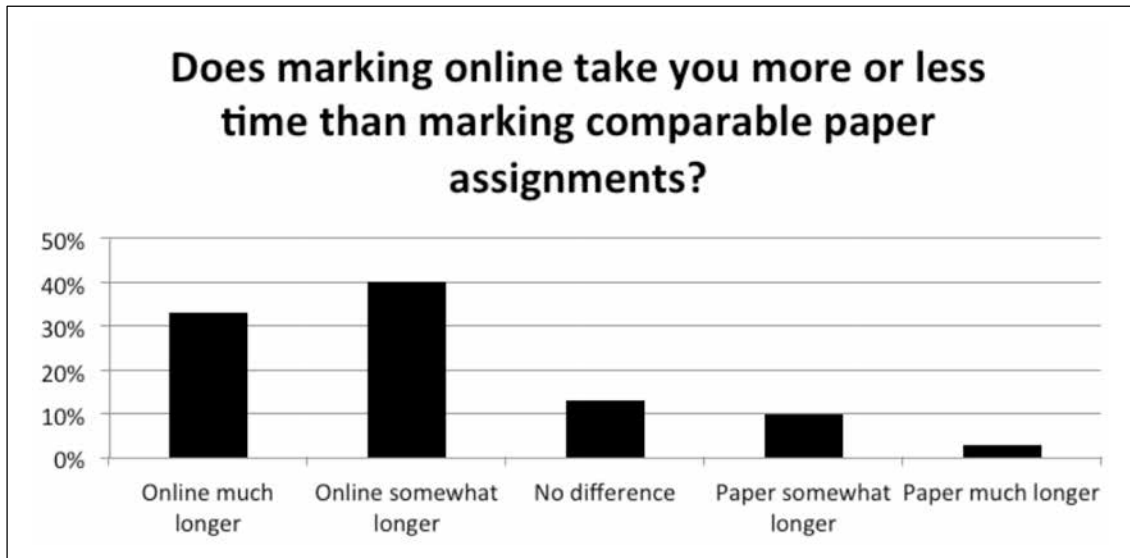


Figure 2 Distribution of Responses on Relative Marking Time for Online and Paper Marking (by Percentage of Sample)

Figure 2 suggests that the majority of respondents perceived OM to take longer than paper marking, this pattern being statistically highly significant:  $X^2$  (4 d.f.) = 19,  $p < .001$ .

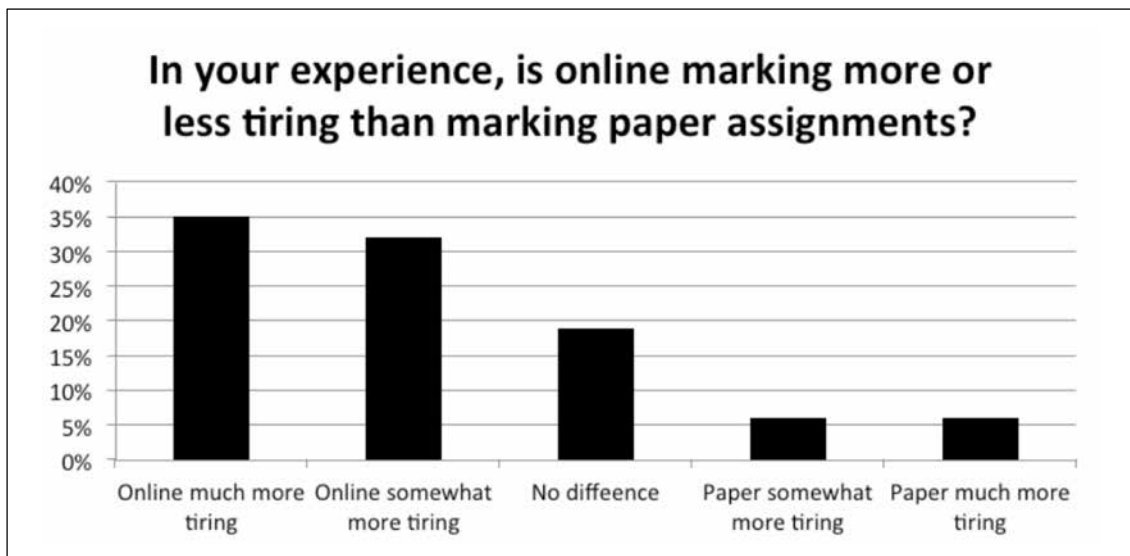


Figure 3 Distribution of Responses on Relative Tiring when Marking Online and Paper (by Percentage of Sample)

Figure 3 shows the majority of respondents indicating that they found OM more tiring than paper marking, this pattern being statistically significant:  $X^2$  (4 d.f.) = 14.96,  $p < .01$ .

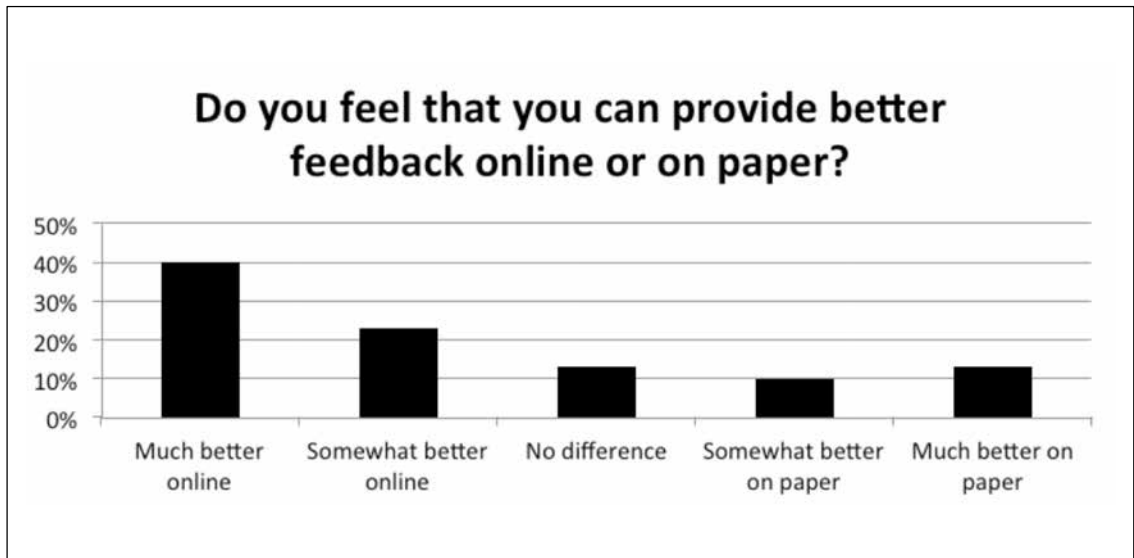


Figure 4 Distribution of Responses on Relative Feedback Quality in Online and Paper Marking (by Percentage of Sample)

Figure 4 shows that the majority of respondents indicated that they can provide better feedback online than on paper, this pattern showing a statistical trend:  $X^2$  (4 d.f.) = 9.18, .1 >  $p$  > .05.

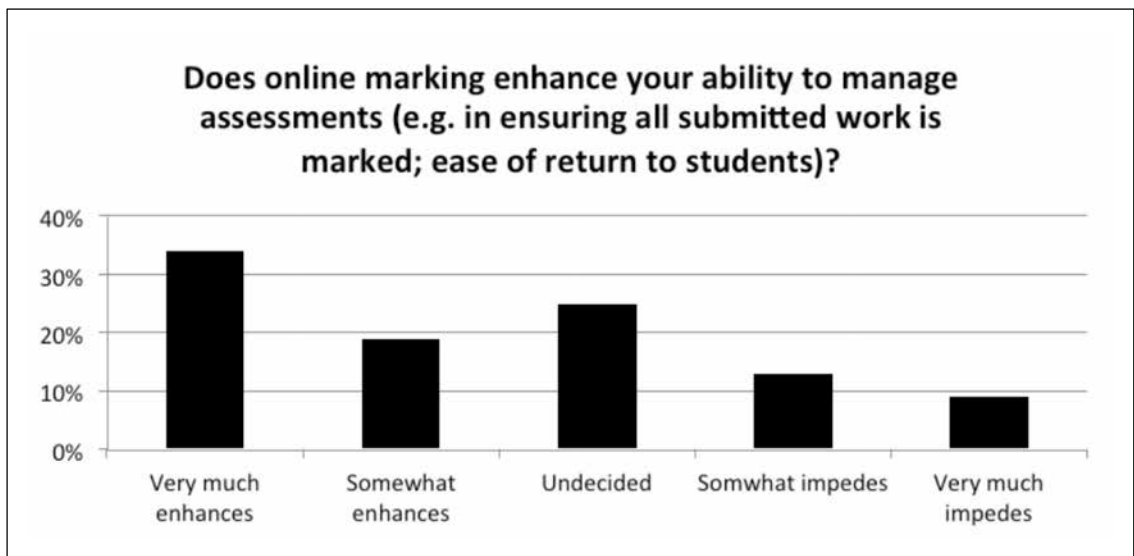


Figure 5 Distribution of Responses on Enhancement Associated with Online Marking (by Percentage of Sample)

Figure 5 suggests no clear consensus as to whether OM facilities enhance academics' ability to manage the assessment process. The pattern of preferences obtained was not statistically significant.

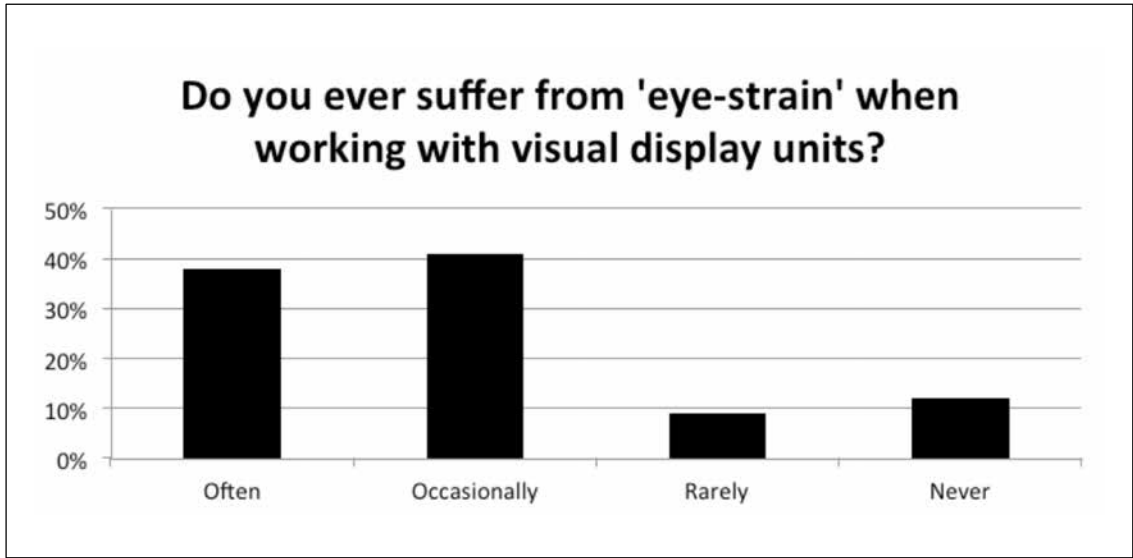


Figure 6 Distribution of Responses on Experience of 'Eye-Strain' (by Percentage of Sample)

Figure 6 reveals that the majority of respondents experience 'eye-strain' at least occasionally, this pattern being statistically significant:  $X^2$  (3 d.f.) = 11.88,  $p < .01$ .

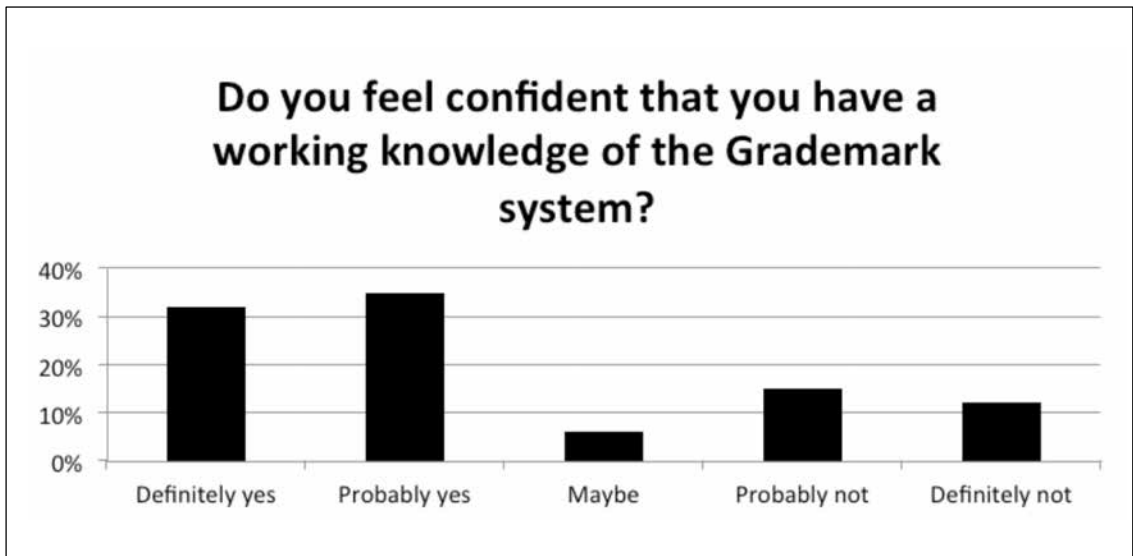


Figure 7 Distribution of Responses Concerning to Confidence in Using the GradeMark System (by Percentage of Sample)

Figure 7 suggests that the majority of respondents do feel some level of confidence in using GradeMark, which is borne out by a statistically significant patterning of responses:  $X^2$  (4 d.f.) = 10.79,  $p < .05$ . However, a sizable minority appear to lack confidence in the requisite knowledge.

Two additional questions in the survey provided respondents with the opportunity to communicate their experiences in their own words:

Q1: In one sentence, what one thing do you most LIKE about online marking?

The most frequent answers to this included reference to portability/not having to transport masses of paper (33% of sentences); legibility of feedback (20%); Quickmark facility which allows recycling of stored feedback comments (20%); saving paper and good for the environment (20%); ease of student access to feedback (13%)

Q2: In one sentence, what one thing do you most DISLIKE about online marking?

The most frequent answers to this included reference to computer/screen work (25%); Moodle/Portal/system problems (25%); Interleaving of GradeMark and marksheet (22%); time taken on online marking (12.5%).

## Analysis of Individual Variations in Preference for Online Marking

Respondents' answers to the questions featured in Figures 2, 3 and 4 were significantly intercorrelated, suggesting that individuals who perceived OM to take longer also perceived OM to be more tiring and had less positive views on feedback generated via OM. However, it is important to stress that these findings are correlational and no causal direction can be inferred. Thus, it is possible that a general dislike of new technology might underpin these correlated responses; alternatively, one or more of these variables may bear a causal relation to the others. A particularly interesting set of relationships to emerge related to preferences for OM. The responses to the question Do you prefer to mark online? (see Figure 1) were scored as a Likert scale and their correlation with responses to the other survey questions was assessed. The following relationships emerged as being statistically significant. These statistical relationships were assessed using Pearson's Product-Moment Correlation Coefficient, designated as  $r$ . Values of  $r$  can range from -1 (perfectly inverse relationship), through zero (no relationship) to 1 (perfectly direct or positive relationship). The findings reveal that the lower an individual's preference for marking online.

- the greater their perception that marking online takes longer ( $r = -0.67$ ,  $p < .001$ )
- the more tiring they perceive online marking to be ( $r = -0.71$ ,  $p < .001$ )
- the greater the frequency of eye-strain that they report ( $r = -0.67$ ,  $p < .001$ )
- the lower their perception of quality of online feedback ( $r = 0.62$ ,  $p < .001$ )
- the lower their perception of enhanced management ( $r = 0.64$ ,  $p < .001$ )
- the lower their self-confidence with GradeMark ( $r = 0.48$ ,  $p < .005$ )
- the lower the proportion of courses in which they use of online marking ( $r = 0.45$ ,  $p < .02$ )

Whilst correlational in nature, this pattern of findings may nonetheless aid in the process of conceptualising the relation of the subject to the technology. For example, on the basis of these findings, one might pose the stark contrast between a 'top-down' process (a priori preferences and expectations influencing perceptions and experiences) and a 'bottom-up' process (experiences of working with the technology influencing preferences). Future work employing more elaborate methods might clarify the nature and contributions of 'top-down' and 'bottom-up' processes, and lead to a sound basis for interventions.

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## Common Experience across Schools

Some initiatives have been established to reinforce good practice in OM conveniently accelerated by the change from WebCT to Moodle in 2011. The change facilitated more forums and discussions on topics related to Turnitin which is integrated into the university's VLE. The university's technical Web Services team in conjunction with the EDU (Educational Development Unit) continue to develop online documentation which supports recently added training initiatives to introduce staff to online marking. In 2012 it is hoped that the provision of additional Webinars will promote the use of GradeMark as well as other Turnitin tools across the university. Strategic management to support cross School groups or forums to discuss assessment issues and experiences which focus on best practice of OM has so far mainly been provided at the individual level.

While technical support is critical, it does not address all the concerns of teaching staff wanting to make the successful transition from paper and pen to online marking. Tutors have raised questions about how best to review the effects in changes to the marking of assessments by OM, or address changes in personal contact with students. What does one individual staff member do when a change to OM means several tutors have to change their approach to assessment, again raising concerns regarding marking guidelines. To facilitate a wider use of online marking perhaps more institutional support could be a driver to successfully sustaining best practice across Schools. Here the opportunity to support more unified cross-School assessment remains open.

## Technical Support

While institutional support could be helpful in providing technical assistance and guidance, that alone could not improve the experience of OM. If staff members are routinely required to use fairly slow computers with small screens, then the overall experience would not be conducive to encouraging further engagement in OM. The sustainability of such activities is undoubtedly underpinned by the technology and vision provided by the university. Those individual staff members who have invested in iPads, have reportedly found marking easier due to the connective speeds and responsiveness of the iPad reportedly making OM a much more an attractive proposition.

However, it is not only staff members that have found computer mobile technology supporting a change in their work habits. The attraction and uptake of mobile technology by students is no longer a novelty but evident by students who use an array of mobile technologies for studying; laptops, iPads, Kindles and palm held devices are routinely used to engage with learning activities including their assessments and their tutors (El-Hussein & Cronje, 2010). Providing a seamless electronic connection between these activities is not only possible but probably desirable to many students, (Vesisenaho et al., 2010; Rossing, Miller, Cecil, & Stamper (2012)). Yet, while new technologies are an important consideration it is not the only one. Clearly for staff to engage fully in online marking, such as GradeMark, a number of considerations have and need wider discussion (Heinrich, Milne & Granshaw, 2012).

Several universities are investing in initiatives to consider the wider implications of marking assessments, giving feedback and integrating online methods with other technologies. JISC funded projects at Derby College (2009) and the University of Glamorgan (2011) have investigated ways to incorporate online marking of assessments. The Keele STAF Project (2010) takes an institutional approach to integrative technologies and how to support staff and students. The issues that have been raised at Keele are not

dissimilar to those found elsewhere. The JISC advance report (2012) by Gill Ferrell, highlights many of the traditional restrictions placed on individuals when endeavouring to share new practices. The report highlights the difficulties affecting innovative use of technologies and implementing change. The main findings include “academic staff have too few opportunities to gain awareness of different approaches to forms of assessment because of insufficient time and a lack of opportunities to share new practices” and that “institutions need to develop effective structures to facilitate the sharing of good practice that exists in small pockets across each institution” (p 3).

The case study of OM within the School of Health & Social Care, for the large part, mirrors the issues and concerns highlighted by the STAF project and elsewhere. These are common problems across the education sector and not localised to individual sectors. It would suggest that individual practices can only sustain good practice to a point, after which institutional strategic management of the problems are needed to enhance the process. Of course, strategies are most likely to be effective if they are more explicitly informed by the behavioural/psychological factors impacting upon users.

## Conclusions

To conclude the case study of OM within the School of Health & Social Care, the respondents to the survey identified a number of positive features in their experience of using the Turnitin GradeMark system: better quality/legibility of feedback to students; the portability of the system, obviating the need to transport bundles of paper; saving paper; the facility for storing sets of feedback comments using the Quickmark facility within GradeMark. Moreover, the majority of respondents were confident that they were sufficiently knowledgeable to make effective use of GradeMark. However, despite the perceived advantages, respondents showed no overall preference for using the GradeMark system. A particularly negative feature concerned the personal cost to the marker: online marking was perceived to take longer and be more tiring than marking on paper. A number of participants identified system problems relating to the platforms used (Portal/Moodle) as well as the interleaving of feedback in the text of an assignment with comments and marks on a mark-sheet. Moreover, a number of participants identified computer/screen work as problematic and a significant number experienced eye-strain when working with computers. As the degree of preference for online marking shown by individuals was strongly correlated with the positive and negative features identified, it is reasonable to suggest that changes in these may lead to changes in satisfaction with GradeMark and its productive use.

Finally, anecdotal evidence suggests that students find electronic submission and grading advantageous. Retrieval can be easy and accessible; tutor comments are edited directly onto the paper and readable. Assessment grades can feed into the university's VLE (Moodle) using the My Grade Tool, allowing students to track their grades within courses. Students can read comments in private when work is marked online without feeling pressured into sharing when work is returned, for example, in class. Students can choose to print out work returned to them or not, all suggesting that there is variability in the student's experience of work that is marked and returned online compared to paper submissions. The next step for this case study is to understand more about the students' perceptions of online marking and what their preferences may be in receiving feedback. A similar survey to this one will be carried out to understand more about providing timely and appropriate feedback from students.

## Future Developments

In order to optimize the use of online marking, it will be important to develop strategy-driven policies that address individual variations in markers' experiences and attitudes. Strategies for reducing time spent while

marking online and any physical discomfort associated with working with a computer would be obvious places to begin. Systemic issues, including the capabilities of the VLE platform are likely to become even more important as online marking becomes more widespread across the university. Innovations in the use of marking grids that take the marker away from treating the task as a traditional paper-marking exercise are also likely to improve the marker's lot without adversely affecting the quality of feedback to the student. Future strategies need to be mindful of the technology and the space in which tutors will be working when engaging with tools such as online marking.

## References

21st Century Learning and Assessment (2008). [Online]. Available at: [http://www.guide2digitallearning.com/files/21st\\_Century\\_Learn\\_Assess.pdf](http://www.guide2digitallearning.com/files/21st_Century_Learn_Assess.pdf) [Accessed: 22nd March, 2012].

Adams, J., Meyer, P., Anderson C.R. (2011). E-feedback for Better Learning and Experience.

*International Conference on Teaching & Learning in Higher Education (ICTLHE)*. [Online]. Available at: [http://bathspa.academia.edu/JoelleAdams/Papers/1261678/E-feedback\\_for\\_Better\\_Learning\\_and\\_Experience](http://bathspa.academia.edu/JoelleAdams/Papers/1261678/E-feedback_for_Better_Learning_and_Experience). [Accessed 6th April, 2012].

Abdelaziz, M.M., Fahim, S.A., Mousa, D.B., and Gaya, B.I. (2009). Effects of Computer Use on Visual Acuity and Colour Vision among Computer Workers in Zaria. *European Journal of Scientific Research*, 35, pp. 99-105.

Bidgood, P., Hunt, P., Payne, B., and Simonite, V. (2007). "Plagiarism in Statistics Assessment - the PiSA project", MSOR/CETL Conference, September, Birmingham.

Burrows, S., & Shortis, M., (2010). *An Evaluation of Semi-Automated, Collaborative Marking and Feedback Systems: Academic Staff Perspectives*. Australasian Journal of Educational Technology 2011, 27(7), 1135-1154.

Chang, C-H., Amick III, B.C., Menendez, C.C., Katz, J.N., Johnson, P.W., Robertson, M., and Dennerlein, J.T. (2007). Daily Computer Usage Correlated with Undergraduate Students' Musculoskeletal Symptoms. *American Journal of Industrial Medicine*, 50, pp.481-488.

Charpe, N.A., and Kaushik, V. (2009). Computer Vision Syndrome (CVS): Recognition and Control in Software Professionals. *Journal of Human Ecology*, 28, 67-69.

Davis, M. (2007) The Role of Turnitin within the Formative Process of Academic Writing: a Tool for Learning and Unlearning?, *The Brookes eJournal of learning and teaching*, vol. 2, [Online]. Available at: [http://bejlt.brookes.ac.uk/article/the\\_role\\_of\\_turnitin\\_within\\_the\\_formative\\_process\\_of\\_academic\\_writing/](http://bejlt.brookes.ac.uk/article/the_role_of_turnitin_within_the_formative_process_of_academic_writing/). [Accessed: 22nd March, 2012].

Derby College (2009). *Tri-Part eAssessment Project*. [Online]. Available at: <http://www.jisc.ac.uk/publications/reports/2009/teafinalreport.aspx#downloads> [Accessed: 22nd March, 2012].

El-Hussein, M. O. M., & Cronje, J. C. (2010). Defining Mobile Learning in the Higher Education Landscape. *Educational Technology & Society*, 13 (3), 12–21.

Ferrell, G. (2012). *A View of the Assessment and Feedback Landscape: Baseline Analysis of Policy and Practice from the JISC Assessment & Feedback Programme*. [Online]. Available at: <http://www.jisc.ac.uk/media/documents/programmes/elearning/Assessment/JISCAFBaselineReportMay2012.pdf>. [Accessed: 22nd March, 2012].

Heinrich, E., Milne, J., & Granshaw, B. (2012). *Pathways for Improving Support for the Electronic Management and Marking of Assignments*. *Australasian Journal of Educational Technology* 2012, 28(2), 279-294.

iParadigms. (2007). *iParadigms is the World's Leading Provider of Web-Based Solutions for Plagiarism Prevention*. [Online]. Available at <http://www.iparadigms.com/history.html>. [Accessed 22nd March, 2012].

Project STAF: *Technology Supporting Assessment and Feedback at Keele University* (2010). Building Capacity: Keele University. [Online] Available at: <http://www.jisc.ac.uk/whatwedo/programmes/bcap/keele.aspx> [Accessed: 6th April, 2012].

Rossing, J.P., Miller, W.M., Cecil, A.K., Stamper, S.E. (2012). *iLearning: The Future of Higher Education? Student Perceptions on Learning with Mobile Tablets*. *Journal of the Scholarship of Teaching & Learning*; Jun 2012, Vol. 12 Issue 2, p1-26, 26p.

University of Glamorgan (2011). *The Evaluation of Assessment Diaries and GradeMark at the University of Glamorgan*. JISC funded project. [Online] Available at: <http://www.jisc.ac.uk/media/documents/programmes/elearning/Assessment/interimreportsmarch12/AF%20Interim%20Report%20March%202012%20Glamorgan.pdf>

*Using Turnitin to Provide Powerful Formative Feedback*, (2008) [Online]. Available at: <http://www.brookes.ac.uk/aske/documents/Turnitin.pdf>. [Accessed: 22nd March, 2012].

Vesisenaho, M., Valtonen, T., Kukkonen, J., Havu-Nuutinen, S., Hartikainen, A., Kärkkäinen, S., (2010). *Blended Learning with Everyday Technologies to Activate Students' Collaborative Learning*.

Winter, C. & Dye, V. (2004). *An Investigation into the Reasons why Students do not Collect Marked Assignments and the Accompanying Feedback*. University of Wolverhampton, Learning and Teaching Projects 2003/2004. [Online]. Available at:

<http://wlv.openrepository.com/wlv/bitstream/2436/3780/1/An%20investigation%20pgs%20133-141.pdf> [Accessed 6 August 2012].

## Author Biographies

Sandra Rankin is a senior lecturer in Psychology and has been with the university for a number of years now, teaching on various courses within the department and around the university. She is interested in e-learning approaches to teaching and assessment and is currently researching the use of deception on Internet social networks.

James Demetre is a principal lecturer in Psychology and has for a number of years taught and researched on children's psychological development. He is currently a Green Impact Sustainability Champion and developing an interest in psychological studies of sustainable living.